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저혈당성 양측 마비 환자에 있어 확산강조영상, 현성확산계수지도의 가역적 변화

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Reversible Signal Intensity on Diffusion Weighted and Apparent Diffusion Coefficient Magnetic Resonance Images in a Bilateral Hypoglycemic Limb Paralysis Patient

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A 70-year-old woman with a history of hypertension, type 2 diabetes mellitus, and coronary artery occlusive disease was admitted for weakness of all extremities and dysarthria beginning 3 hours prior. Upon arrival, she had a regular heart rate of 84 beats per minute, respiration of 15 rates per minute, blood pressure of 187/77 mmHg, and body temperature of 36.7℃. The patient was alert, and mental function was preserved. Cranial nerve examination was normal with the exception of left-side, central-type facial palsy. Motor examination revealed a bilateral asymmetric upper and lower extremities weakness (about grade IV), which was more severe on the left side. All sensory modalities appeared to be operating normally. Deep tendon reflex was normoactive, and there was no Babinski sign or ankle clonus. Brain magnetic resonance images (MRI) showed focal, nodular, bright signal intensities in the bilateral posterior limb of the internal capsule on diffusion weighted images (DWI), and decreased signal intensities at the corresponding areas on afferent diffusion coefficient (ADC) images. Laboratory studies were normal, except for a glucose level of 40 mg/dL (normal 65 - 110 mg/dL) upon arrival. Fifty mL of 50% dextrose water was administered intravenously initially, followed by infusion of 5% dextrose water. All symptoms and focal neurologic abnormalities disappeared about 30 minutes later, first on left side and subsequently on the right side. Follow-up MRI performed about 24 hours after symptom recovery showed that DWI and ADC maps had returned to normal. In hypoglycemic patients, cytotoxic edema, shrinkage of the extracellular space as a result of brain energy failure, and a reduction of cell membrane ionic pump activity can be observed on DWI and ADC changes similar to those observed as a result of ischemic stroke (Figure 1).[1,2]

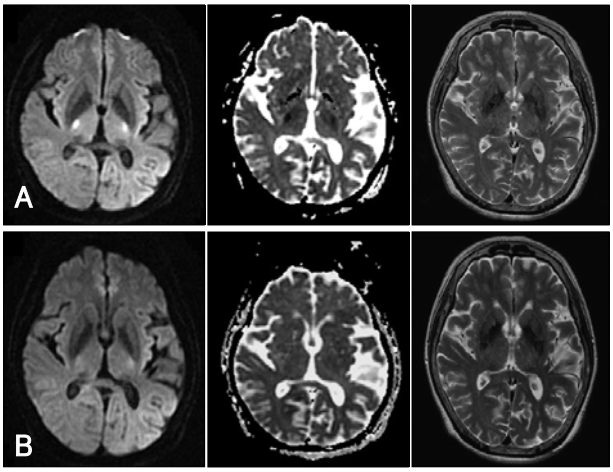

FIGURE 1. DWI, ADC, and T2 weighted MRI. A: On admission, focal nodular bright signal intensities in bilateral posterior limb of the internal capsule on DWI, and corresponding decreased signal intensities on ADC image. B: 24 hours after admission, DWI and ADC changes returned to normal. DWI: diffusion weighted images, ADC: apparent diffusion coefficient.

REFERENCES

1. Aoki T, Sato T, Hasegawa K, Ishizaki R, Saiki M. Reversible hyperintensity lesion on diffusion-weighted MRI in hypoglycemic coma. *Neurology* 2004;63:392-393.
2. Cordonnier C, Oppenheim C, Lamy C, Meder JF, Mas JL. Serial diffusion and perfusion-weighted MR in transient hypoglycemia. *Neurology* 2005;65:175.

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